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The Main Principles of Environmental Law

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Abstract

This article examines the fundamental role and nature of principles within environmental law. Derived etymologically from the Latin principium (foundation), legal principles serve as the bedrock for interpreting law, guiding its application to social relations, and evaluating its societal value. Environmental law principles are highlighted as particularly prevalent and crucial within international law. They define essential traits of legal institutions, establish foundational standards, and fill gaps in codified ("positive") law. While possessing characteristics of fundamental equality, legal certainty, and proportionality, they often function as non-binding guidelines influencing judicial construction and legislative development, with concepts transferable between legal systems. The text specifically analyzes two core, indispensable principles recognized in Vietnam and globally: (1) the Prevention Principle, justified by the frequent irreversibility of environmental damage and focusing on deterring harm through stringent legal provisions; and (2) the Polluter Pays Principle (PPP), formalizing the requirement that polluters bear the costs of cleanup and environmental liability. The PPP's effective application is argued to depend critically on two requirements: penalties commensurate with the environmental impact (parity) and sanctions heavy enough to realistically deter future pollution. The author contends that the consistent and scientific application of the PPP plays a vital role in environmental protection.

Keywords

Principles of environmental law; International application; Legal liability/deterrence; Polluter pays principle; Prevention principle

Introduction

The word 'principle' is derived from the Latin (*principium*), meaning foundation, dominant thought. Principles of law are fundamental issues, the starting points from which to determine the content of the law's impact on social relations, and the criteria

for assessing the value of the law to the subjects under the law. Concerning environmental law, the principles of environmental law can be understood as the authorities' views that are enacted through environmental legislation promulgated by relevant state agencies to apply within a country. In particular, the principles of environmental law are often more specific because they have to conform to the provisions of international environmental law.

In comparison with any other field of international law, applying principles in environmental law is more widespread. It helps highlight the vital traits of legal institutions, establishes foundational legal standards, and covers the gaps in positive law by designating merits to essential rules despite the absence of official legal tools. Principles can be characterised in either fundamental terms, (equality and legal certainty) or technical terms (proportionality). They can be found in constitutions and basic laws, as well as at a judicial construction level. Furthermore, they are sometimes referred to as general guidelines that laws have to comply with, i.e., how the law should be understood, but without establishing a binding practice. People can define and apply principles in various and competing ways, including developing different conceptual interpretations of principles. Thereby, a legal system may potentially be influenced by other principles, which will, over time, be adopted and converted to new regulations and laws. In this way, the concept of 'principles' and their juridical value can be transferred or 'inherited' from one country's legal system to another.

In international treaties and jurisprudence, every unbound standardised tool has its own defined and applied principles with specific meaning. Principles applied in policies on the environment and in shaping EU legislation are regulated by Articles 11 and 191–193 of the Treaty on the Functioning of the European Union (TFEU) firmly anchor environmental protection at the heart of EU governance, designating the Union as the primary authority for environmental policy. These provisions empower the EU to act decisively across key domains, including air and water quality, waste management, and climate change mitigation.(Lucia, 2024) The complexity of the various environmental subjects is a significant problem when issuing detailed regulations at an international level. However, it also plays an essential role in motivating the general approach that emphasises anticipation and precaution. As "our understanding of the environment is no longer able to keep pace with our ability to modify it," an anticipatory approach seems more essential. The principles presented below are the basic principles of environmental law in Vietnam and apply in similar ways to jurisdictions around the world. These are considered immutable and indispensable principles in the environmental legal system. They include the prevention principle and the polluter pays principle.

The Prevention Principle

It is generally accepted that there is a preventive factor in any field, and that this is crucial, just like in the medical field, where the often used saying goes, 'prevention is better than cure.' This principle is fundamental in the environmental realm. Because the environment is made up of many various natural factors, such as soil, water, air and biology, these factors interact and create a close relationship with one another, with a significant influence on life, production activities and the existence and development of both humans and nature. Hence, when the environment is damaged, it is either

irreversible or difficult to remedy, because it is expensive and time-consuming to restore its original value.

Therefore, the prevention of environmentally harmful behaviours needs special attention. The Environmental Law in Vietnam, as with many countries around the world, considers prevention as one of the essential principles of the legal system governing environmental protection. This principle is expressed through the enactment and application of legal provisions aimed at preventing entities from engaging in acts that can cause harm to the environment before environmental damage occurs. The prevention principle operates as a prudent and forward looking complement to the polluter pays principle in that it shifts the focus of environmental regulation from ex post compensation to ex ante risk avoidance, requiring authorities and operators to adopt measures aimed at preventing environmental harm before it materializes (De Sadeleer, 2002).

There are four main components of the principle identified in the statement: taking prevention measures to deal with uncertainty, transferring the burden of proof to the acting proposal, exploring alternative remedies for hazardous actions, and encouraging greater public participation in the decision-making process. The more proactive prevention, the less likely harmful impacts will occur. Although repairing environmental damage is important for both environmental protection and human health, prevention lies at the core of environmental law. Environmental harm is often irreversible: destroyed ecosystems cannot realistically be restored, extinct species represent permanent loss, and the costs of remediation are frequently prohibitive. As a result, society is effectively consuming natural capital rather than living off its sustainable yield. For these reasons, effective environmental protection depends primarily on preventing damage before it occurs. Accordingly, environmental law is fundamentally anchored in the prevention principle, which positions preventive action as the cornerstone of rational and effective environmental governance (Cristina, 2025). The prevention principle is considered a guiding principle of the European Union's environmental laws. It is now regarded as a foundational principle in the environmental regulatory frameworks of many countries.

In international environmental law, the prevention principle is widely recognized as a cornerstone of environmental protection. However, it remains largely abstract and indeterminate, as international instruments rarely specify with precision the concrete obligations that States must undertake to prevent environmental harm (Duvic-Paoli, 2018). A clear conceptual distinction between the prevention principle and the precautionary principle has been firmly established in international environmental law since the early 1990s, particularly following the Rio Declaration on Environment and Development (1992). The prevention principle is grounded in situations where environmental risks are already known and scientifically demonstrated. It requires States and economic actors to take timely and appropriate measures to avoid or minimise foreseeable harm, especially when the causal link between an activity and potential damage is well established.

By contrast, the precautionary principle applies in circumstances characterised by scientific uncertainty, where potential risks cannot yet be fully proven but may be serious or irreversible (Aven, 2023). As articulated in Rio Principle 15, the lack of full scientific certainty shall not justify postponing cost-effective measures to prevent environmental

degradation. Precaution therefore enables regulators to act in advance of complete evidence, favouring protective decisions when knowledge is incomplete. Traditionally viewed as a soft-law policy guideline, the principle has gradually "hardened" through its incorporation into various EU instruments, chemical regulation, GMO governance and global environmental risk frameworks. Distinguishing these two principles is essential for analytical clarity: prevention concerns the control of known risks, whereas precaution governs decision-making under uncertainty. Their different legal statuses and operational triggers shape regulatory approaches, compliance obligations, and the burden of proof in environmental governance.

In tackling suspected threats, especially serious or irrecoverable ones, tasks must be prioritised to protect the environment and people's health. These tasks include increasing access to scientific resources for researching risky and hazardous agents, a more thorough review of alternatives for action, more appropriate and comprehensive analysis and cost-effective estimates of policy (if possible), ideally including distributional analysis across affected groups, and a closer and stricter examination of preventive measures to keep up with innovation in science, information and technology. This can all be applied to climate change, loss of biodiversity, radiation exposure, chemical poisoning, food hygiene, biotechnology and nanotechnology (Gonçalves, 2013).

It seems difficult to clearly determine the relationship between air pollution levels and the number of deaths from respiratory disease, between water pollution levels and healthy populations of fish, or between the development of an oil industry in an area with a high public awareness of environmental protection and stressful native ecology. According to the prevention principle, strong suspicions of any activity likely to cause environmental harm must be monitored immediately rather than waiting for definitive scientific evidence. This is stated in the Rio Declaration, which states that where there are threats of serious or irreversible damage, the lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (Poorhashemi, 2023).

The clear connection between the prevention principle and environmental liability generally emerges through a narrow explanation of this principle (Hassen, 2025). A polluter who can demonstrate that they took all reasonable measures to prevent an environmental disaster, and that the pollution was a result of an unforeseen accident, may be exempt from liability, though this should be strictly assessed on an individual, case-by-case basis. The natural environment is a combination of natural and social factors that interact with each other. If there is a negative impact on the environment, the factors that exist in the environment are also affected. Meanwhile, these negative impacts lead to irreversible or irrecoverable problems, or at least problems that are recoverable but at significant expense in terms of time, effort, and financial resources. Indiscriminate deforestation has led to serious consequences: drought, landslides, flash floods, and huge damage to people and property.

Vietnam, a lower-middle-income country in Southeast Asia, ranks among the world's most climate-vulnerable tropical nations. The country is routinely exposed to severe hydro-meteorological hazards, including typhoons, cyclones, floods, storms, and landslides. Nearly 70% of the population lives in coastal areas, where exposure to storms

and flooding is high and intensifying as climate change accelerates. Each year, flooding alone affects approximately 930,000 people and causes economic losses estimated at USD 2.6 billion, underscoring the scale of climate risk confronting Vietnam (Linh Tran *et al.*, 2023). It is actually both costly and time-consuming for the vegetation to grow and fulfil its ecological functions. As a result, many people in Vietnam became discouraged because, after all of the cost, effort, scientific and technological research for improving the environment, the impact remained limited, undermining public confidence. So, in the face of the great cost of remedying the consequences, it was suggested that, when considering actions to mitigate negative environmental consequences, why not prioritise the use of the allocated expenditure towards prevention that can be readily foreseen in practice? 'Prevention is better than cure' is a popular phrase that most people would consider to be simple common sense (Babu *et al.*, 2023). In this phrase, 'prevention' essentially means preparation, activating a strategy in advance to steer clear of predictable disasters, and generally avoiding a passive attitude of waiting for the next disaster to occur. By comparing the costs of preventing negative impacts on the environment and the costs of remedying the consequences of environmental damage, we can once again affirm that the costs of prevention are always smaller than the cost of remedies (Elleuch *et al.*, 2018) Therefore, prevention is not only a common-sense approach to reducing the damage caused as a consequence of environmental disasters but is also a more cost-effective way of managing environmental issues.

Otherwise, when the environmental damage has occurred, it is likely to be either irreversible or challenging to remedy, because it will be expensive, time-consuming and problematic in process of restoring its original value. Therefore, the prevention of harmful behaviours towards the environment needs special attention. Environmental Laws in Vietnam, as in many countries around the world, consider prevention as one of the essential and necessary principles of the legal system. This principle is expressed through the enactment and application of legal provisions aimed at preventing entities from engaging in acts that can cause harm to the environment before any environmental damage actually occurs.

Vietnam's Law on Environmental Protection 2020 stipulates that environmental protection activities must be conducted regularly, with priority measures to prevent environmental pollution, incidents, and degradation. This demonstrates that the law treats prevention as a priority activity. It demonstrates the importance of the prevention principle in environmental protection in Vietnam. In Vietnamese law, the preventive measures applied in environmental protection activities are very diverse; for example, the Environmental Law 2020 provides for the implementation of measures to prevent environmental incidents for owners of property used for export, business, services and transport means. In addition to its normative foundation, the prevention principle is concretely operationalized in Vietnam's environmental regulatory framework, particularly through the 2020 Law on Environmental Protection (The National Assembly, 2020). Several mechanisms illustrate how this principle functions in practice. First, environmental impact assessment (EIA) is mandated for projects likely to generate significant adverse impacts (Article 30), requiring project owners to identify known risks and adopt preventive measures before approval. Second, the law imposes environmental permit conditions (Articles 39–48), which set limits on emissions, technology standards, and waste-

management obligations to prevent foreseeable pollution incidents. Third, for sectors with high ecological risks, Vietnam applies a deposit–refund system (Article 137), requiring entities engaged in mineral extraction and hazardous waste management to provide financial assurance to prevent environmental degradation and ensure post-operation restoration. Finally, the prevention principle is reinforced through administrative sanctions under the Law and Decree 45/2022/NĐ-CP (Vietnam Government, 2022), where violations such as exceeding discharge standards or failing to implement risk-mitigation plans trigger substantial fines and mandatory remedial measures. These instruments demonstrate that prevention is not merely a theoretical construct but a legally enforceable obligation embedded throughout Vietnam's environmental governance system, ensuring that known risks are controlled proactively rather than addressed only after damage occurs.

There are two basic grounds. First, the cost of prevention is always lower than the cost of remediation. As we know, the natural environment is a combination of natural and social factors that interact with each other. Although preventive measures are widely regarded as more cost-effective than remediation, contemporary environmental-economic research cautions against framing this relationship in absolute terms. Empirical analyses show that in the vast majority of cases, the marginal cost of early intervention, such as upgrading technology, controlling emissions or improving waste-handling systems which are substantially lower than the financial, ecological and social costs associated with restoring a degraded environment. This tendency is particularly evident in areas where environmental damage can exceed ecological thresholds, rendering full recovery technically difficult or economically prohibitive, such as heavy-metal contamination, oil spills or the loss of coastal wetlands. Nevertheless, the relative cost-effectiveness of prevention may vary across sectors, depending on risk magnitude, technological feasibility and institutional capacity. Accordingly, instead of asserting that prevention is "always" cheaper, a more accurate formulation is that prevention is generally more efficient, predictable and sustainable than remediation in most environmental governance contexts, and is therefore prioritised as a foundational component of modern environmental policy.

Many researchers believe that 'Prevention is better than cure' because 'prevention' involves preparation and establishing a response in advance, in order to prevent or to avoid possibly bad situations, whereas 'cure' is when the consequences have already occurred, leaving the 'cure' as the only course of action left to overcome the consequences. By comparing the cost of preventing adverse environmental impacts, the cost of protecting the environment and the cost of remedying the environment, we can once again assert that: the cost of prevention is always lower than the cost of recovery. Second, damage caused to the environment is sometimes irreparable, though it could often have been prevented with some forethought. As human societies continue to develop around the world, many people seem to consider the environment as merely a resource to be exploited by people, without appreciating that the environment is the only reason people exist, and that its continued wellbeing is critical for the species to survive (Hayenhjelm, 2023) Nevertheless, humans are gradually destroying their own living environment and people are suffering huge losses caused by their own behaviour in relation to the environment. Under these circumstances, people often only know how to respond with limited corrective actions, without questioning whether those actions fully address the consequences. If they did ask, they would find that the answer is a definite

'no'. Once the mirror has broken, it cannot simply be restored to the state it was in before. The question is whether there are any other measures that people can take to protect themselves and limit the impact on the environment. The answer is yes, and the best measure involves prevention. Through the excellent advances in science and technology, people now have the great advantage of predicting the future effects of certain behaviours using environmental impact studies. For example, people can use modern technology to overcome the problem of mangrove erosion by restoring them with natural chemical stimulants to enhance their growth, or a pond/lake that is at risk contamination can be purified, or where the air environment is becoming polluted, trees can be planted to offset the negative impact on the atmosphere. However, we must ask ourselves whether losses can always be fully recovered. The answer is generally no. The remedy only reaches a certain level. In general, while it may be possible to overcome losses in individual areas or recover from environmental pollution in certain locations, it seems virtually impossible to halt the global process of climate change and environmental destruction. Therefore, we can only attempt to reduce the impacts of global climate change, such as tropical depressions, storms, and winds that can cause low-lying coastal areas to become submerged. The consequences of all these environmental changes are still not fully known, and even people in affected areas are not sure whether they and their land can survive the threats. For example, if an animal species becomes extinct, it affects the food chain of other species, which will then struggle to survive, leading to unforeseen and unpredictable consequences. Moreover, once a species has entirely disappeared, it and all the consequences of this loss cannot be reversed. With the many 'red light' warnings about extinct plants and animals due to habitat destruction, as well as uncontrolled and indiscriminate hunting by humans, it is clear that the consequences of species extinction cannot be reversed. Under such warnings, we can only prevent severe environmental tipping points by preserving and protecting these creatures from the risk of disappearance. Therefore, prevention is a critical measure to prevent catastrophic consequences by reducing damage to a minimum. The above statements confirm that there are losses caused to the environment that cannot be reversed once they occur but can only be prevented from happening in the first place. Prevention is about protecting people, improving their relationship with the environment.

Principle 15 of the Rio Declaration (Hoepner and Rogelj, 2021) on the Environment and Development states that:

> "*To protect the environment, prevention access should be widely adopted by countries depending on their capabilities. In the case of threats of serious harm or irreparable repair, the lack of scientific evidence cannot be the reason for delaying cost-effective measures to prevent environmental degradation*."

The Law on Environmental Protection 2020 of Vietnam stipulate that environmental protection activities must be conducted regularly, and measures should be prioritised to prevent environmental pollution, incidents and degradation. In other words, the law clearly states that prevention is a priority activity, which shows the importance of prevention principle in environmental protection. The clear link between the prevention principle and environmental liability is applied by adopting a narrow interpretation of the principle, to ensure that preventive measures are as strong and encompassing as possible, and only a strongly justified defence will allow liability to be avoided. In order for this principle to be effective, there are two requirements. Firstly, it is important to

anticipate the risks that the environment and nature can pose. It can be said that risk prediction has a decisive meaning to the effectiveness of the prevention and anticipation of negative impacts, helping us to quickly identify elimination measures and preparation. Secondly, risk prediction can be used to determine the elimination measures and to prepare for all possible scenarios, resources, and response measures, in order to be ready to deal with serious impacts on the environment.

In summary, the prevention principle or preventive approach has emerged in recent decades. It is increasingly accepted as a general principle of environmental policy, law, and management in many countries around the world (Awewomom *et al.*, 2024). This principle is is used to address uncertainties and complex dilemmas in environmental protection. In addition, it sets out actions to avoid and limit damage to the environment that may occur in the future. Since its introduction, the prevention principle has become one of the basic principles the golden principle of environmental protection (Naik, 2018). This principle is reflected throughout the legal provisions governing the environmental sector; it contributes to an important direction in the enactment and application of legal provisions to prevent entities from performing acts that can cause harm to the environment.

The Polluter Pays Principle (PPP)

As the name suggests, the intention behind the Polluter Pays Principle is to ensure that those individuals or industries causing damage to the environment by emitting hazardous materials are the ones to pay the costs associated with restoring those impacted areas. Any entity that extracts natural resources or releases pollutants into the environment, or that acts in a way negatively impacting the air, water or soil, is obliged to pay for restitution. This use of an economic disincentive to control the behaviour of polluting entities should benefit society as a whole. Anyone who is found to have endangered the environment through their actions will incur penalties and remedial obligations. Charges and fees are essential tools for translating the polluter-pays principle into practice, ensuring that pollution control becomes a central factor in economic and regulatory decision-making. Pollution charges are typically calculated based on the volume or intensity of pollutants released into the environment, while user charges may be imposed for services such as waste collection and disposal, or the treatment of polluted water and soils. Revenues generated through these mechanisms can be directed into national or local environmental funds to support environmental remediation, protect public health, and offset the social costs of pollution. This approach is firmly grounded in Principle 16 of the Rio Declaration on Environment and Development (1992), which urges States to internalize environmental costs through economic instruments, based on the premise that polluters should, in principle, bear the cost of pollution, while safeguarding the public interest and avoiding distortions to international trade and investment (United Nations Environment Programme, 2017).

Within the marketplace, the environment is considered a ‘special commodity’ because it is owned communally, and not by an individual, and because it is used by both individual and commercial users. Assessing financial penalties for endangering the environment facilitates the efficient management of the environment (Thiet, 2021). Therefore, assigning financial obligations for environmental harm will help to effectively manage

its use and exploitation. Companies must take full responsibility for all damage caused to the environment by their production and business activities must pay for the restoration of polluted locations. The state has a duty to ensure that the companies are held responsible for the damage caused to people, to biodiversity and to the environment (El-Mallah, Aref and Sherif, 2023) This liability regime includes financial obligations for detoxification and rehabilitation activities. Initially, the PPP was viewed as a way of ensuring that polluters assumed responsibility for their actions rather than forcing the government and citizens to implement a clean-up. The underlying concept was that any type of business producing pollutants, for example, in the mining or manufacturing cycle, would be required to assume the costs of restorative measures. According to the PPP model, the offending subject or entity must pay all the costs of any abatement or renewal measures.

According to the PPP, the polluter must bear all the costs of the government implementing pollution reduction measures to ensure acceptable environmental conditions for ongoing survival and development. Polluters must pay for the damage they have caused to the natural environment. Its primary goal is to internalise the external environmental factors of economic activity, meaning that goods and services must fully reflect the environmental costs. The cost of goods encompasses the costs of environmental pollution. Therefore, when customers buy goods, the price they pay covers the costs of production, but also, indirectly, covers the environmental costs generated during production and consumption. Taking the production and distribution of cigarettes as an example, the price of a pack of cigarettes includes the tax related to environmental protection. This means that anyone purchasing cigarettes is paying taxes indirectly for the effects of their purchase on the environment (Le and Jaffri, 2022). That is why tobacco has long been one of the most highly taxed products, because customers release smoke into the air and pollute the environment. Hence, they have to take responsibility for environmental pollution. In this case, the customers themselves are considered polluters. According to the PPP, the polluter, whether the producer or the consumer, is responsible for the costs of repairing the environmental damage that they cause. To be more specific, the polluters must pay an amount proportional to the pollution they generate.

Several international documents have been adopted in connection with PPP. These include the 1993 green paper, the 2000 white paper, and Directive 2004/35 EC issued by the European Parliament and the Council. Delegates to the U.N. Conference on Environment and Development (Rio de Janeiro 1992) also vigorously debated the issue, resulting in Principle 16 of the Rio Declaration (Chasek, 2022) with the following wording:

> "*National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment*."

At this conference, all the representatives of the attending countries endorsed the content of Principle 16. The polluter-pays principle (PPP) requires that those who cause environmental harm bear the costs of pollution prevention and remediation. Closely linked to absolute liability, the principle applies regardless of fault, particularly in relation to inherently hazardous activities.

Developed in the 1960s by A. V. Kneese and J. H. Dales, PPP promotes the internalization of environmental costs through economic instruments, most notably Dales' 1968 proposal for tradable discharge permits. The principle gained international recognition in 1971 when the OECD endorsed it at a Paris seminar, marking its emergence as a cornerstone of modern international environmental law (Barthakur, 2021). For example, we can imagine a river flowing through a residential area, from which people draw water for their daily use. If there was a nearby factory that directly discharged waste into that river, causing it to become polluted, this would make it impossible for people to use the river water for their daily needs as before. In this case, the management of the factory would have to compensate the victims for the damage. However, in some cases the application of PPP is seen as limiting freedom, and even considered unconstitutional.

The PPP has received wide acceptance and has been adopted by many international treaties. In Europe, Article 130r (2) of the Single European Act incorporates the PPP as one of the principles of environmental law. By stating "Action by the Community relating to the environment shall be based on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source, and that the polluter should pay. Environmental protection requirements shall be a component of the Community's other policies" (Lindhout and Van Den Broek, 2014). But as seen from this chapter, there are no specific measures assigned for implementing the PPP nor to ensure its application. Therefore, it is left to the Member States to enforce this principle within their jurisdictions, ensuring compliance with EU requirements that attempt to internalise the cost of environmental damage after it occurs, or even before.

In 2004, the European Commission proposed a directive on environmental liability with an emphasis on environmental damage and the establishment of an environmental liability framework. This framework, based on PPP, specifies that the party causing damage is responsible for reversing it (European Parliament, Council of the European Union, 2004). This is effective when the polluter is easily identified, because a clear link exists between hazardous behaviour and the resulting environmental damage. However, the directive recognised that situations may arise where cause-and-effect connections are unclear, i.e., where pollution is dispersed, and its source is unclear. Only when those responsible for the environmental damage (the operator) can readily and positively be identified can the person or company held responsible for environmental deterioration. Therefore, based on this the European Parliament and the Council of the European Union issued Directive 2004/35/EC, known as the Environmental Liability Directive (ELD). This directive establishes a legal framework for EU Member States to apply the PPP to encourage the prevention of environmental pollution, as well as remedial measures. This directive took effect on 30 April 2004 and by 2010 it had been transposed into the laws of all the European Union Member States to protect against damage to water, soil, fauna, and flora.

The ELD came up with the essential concepts of 'environmental damage' and 'operator'. In particular, it clarified provisions on 'Strict liability and Fault-based liability' in its Annex III. In addition, the ELD emphasised the causal relationship between actions of individuals or organisations and the environmental damage impacting people's lives. It establishes the relationship between perpetrators and victims in an environmental case

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and includes natural persons, legal entities and NGOs, or anyone who must then bear the cost of remedying the environmental damage they caused (Andreotti, Montanaro and Calcagni, 2024).

The theoretical persuasiveness of the prevention principle and the polluter-pays principle (PPP) is significantly strengthened by their concrete expression in legal frameworks across the world. A prominent illustration is the European Union's Environmental Liability Directive (2004/35/EC), a pioneering legal instrument that transforms PPP into practice through a hybrid liability regime: strict liability for hazardous activities listed in Annex III and fault-based liability for other cases. The Directive requires operators to finance preventive and remedial measures when damage occurs to water, soil, or protected species, vividly demonstrating how PPP functions effectively when causal links between hazardous conduct and environmental harm are identifiable. In the field of international law, jurisprudence from the International Court of Justice in Pulp Mills case (2010) (McIntyre, 2010) strengthened the prevention principle by affirming that conducting an Environmental Impact Assessment (EIA) is a mandatory procedural obligation under customary international law for projects posing transboundary environmental risk. This ruling transforms an abstract policy notion into a binding legal duty for States. In sum, through concrete examples from regional legislation, international jurisprudence, and financial regulatory tools, these two principles have demonstrated their practical relevance and flexible applicability, establishing themselves as indispensable pillars of contemporary environmental governance.

In Vietnam, the laws have introduced provisions related to liability under the polluter - pays principle. That means that all organisations, households, and individuals that use environmental components for commercial purposes are obliged to assume responsibility for environmental protection and restoration. If the actions of any individual or organisation cause environmental degradation, pollution or environmental incidents, they will be held responsible in accordance with the provisions of Vietnamese law. According to Vietnamese law, the punishment for polluting actions must accord with the 'nature and extent' of the negative effects suffered. The precise classification of the type and extent of each action that negatively impacts the environment is considered (Nguyễn, 2024). An entity undertaking an action needs to understand the potential for environmental pollution that their actions may cause and consider the legal consequences that they will have to bear should such damage occur. For example, if a new textile factory A was considering including a wastewater treatment system that was constructed in accordance with the standards issued by the state agencies at a cost of USD 1 million, they would understand that this would ensure the safety of the wastewater discharged into the environment, and in so doing, minimise their risk of causing pollution. On the other hand, they could consider reducing expenditure by constructing a functional and cheaper system that only cost, say USD 300,000, but with the knowledge that it would not meet national standards for wastewater treatment. However, any astute investor would understand that the latter option is a false economy, as the costs involved in fines, restoration work and compensation could run into millions of dollars if a major toxic discharge were to occur. This would be an example in which the factory owners, anticipating the legal, financial, and public relations consequences of causing major environmental pollution decide to invest in minimising the risk of that happening.

Every subject that affects the environment to any extent will incur varying financial obligations. Therefore, the amount of money paid that can influence the interests and behaviours of subjects in a way that is beneficial to the environment is also completely different. The PPP content may also conflict with a national legal system's requirements for environmental benefits/subsidies (see below), which are designed to create positive changes for the environment by investing in pollution reduction. However, such government spending could potentially distort international trade if the parties do not agree on how to subsidise the environment, creating inequality in international competition. The PPP does not allow subsidies for polluting activities, except in polluted areas facing significant financial difficulties. Nor does it exclude cases where countries take advantage of environmental subsidy provisions to make disguised production subsidies, because environmental subsidies are now an exception in the World Trade Organisation (WTO) provisions on subsidies. Environmental subsidies are important economic instruments used in many countries of the OECD (Organisation for Economic Co-operation and Development) (Mohamed-Katerere, 2008).

Environmental subsidies include forms such as grants, loans, accelerated depreciation and tax incentives. The main function of the subsidy is to help industries, agriculture and other sectors overcome environmental pollution when the environmental pollution is too burdensome, or the financial capacity of the business cannot handle the environmental pollution. It is only a temporary measure, as improper or prolonged use can lead to economic inefficiency and goes against the Polluter Pays Principle. In international environmental policy and law, the principle most closely connected with PPP is the Benefit Pays Principle (BPP).

BPP takes a different approach to pollution prevention. Instead of focusing mainly on the application of administrative and command methods under the PPP, the governments of many countries (especially OECD countries) have also looked towards applying the principle whereby beneficiaries of a clean environment have to pay through the application of economic instruments for environmental management. Unlike polluter–paying model, beneficiaries who enjoy an environment that has been improved also pay a fee. It can be understood that this principle means that anyone who benefits from having a clean, unpolluted environment must contribute to keeping things that way. The Benefits- Based principle (BBP) advances a different perspective on pollution prevention by requiring the beneficiaries of a clean environment (public or industry) to bear some of the costs of its maintenance. BBP spreads the burden of pollution remediation among all the sectors that benefit, regardless of their contributions to environmental deterioration. It avoids the dilemma of forcing manufacturers to pay the costs of reversing damage, especially in cases where the polluters have not been clearly identified. In essence, the PPP has two distinct elements. The first element of PPP requires the polluter to pay the costs of waste control within a particular environment. In contrast, the second element requires that the polluter pays the cost of controlling waste discharged into the environment and to pay the cost of environmental damage and compensation to the victims (García-Portela, 2023).

The PPP plays a critical role in improving and restoring the environment in many polluted areas. In some cases, efforts are made to establish a partnership with the local residential community when planning and implementing environmental rehabilitation.

This collaborative approach is considered beneficial for all stakeholders, especially the state. This is because it reduces the burden on the state budget, as, despite other parties usually being responsible for environmental damage caused, the subsequent technical and legal processes involved invariably come at a significant cost to the government. Take, for example, environmental improvements to a river basin: pollution in the river is caused mainly by three sources: domestic wastewater, hospital wastewater, and wastewater discharged from factories. Consistent with the PPP, the residents, factories and hospitals would be the three entities responsible for paying for their share of the environmental damage. However, it also needs to be considered that, after the river has been renovated, the area may no longer experience annual flooding, thereby benefiting the people living along the river bank, and improving their living environment. Therefore, a fair and sustainable approach would be a combination of state investment, revenue from local taxes and penalties and regional capital to improve the river, in accordance with a long-term feasibility plan.

The concept of PPP has already been instrumental in facilitating environmental protection through the use of financial imperatives. Occasionally the Vietnamese government takes into consideration local conditions and customs in provincial areas where limited pollution occurs and is less rigid when applying the concept of PPP. For example, residents in the Mekong Delta region of southern Vietnam, through their daily activities and culture discharging polluting materials into local waterways. However, because the natural and socio-economic conditions in this area are very poor and outdated compared to other areas in Vietnam, the penalties under the PPP are generally not applied. However, at an industrial level, Vietnam the PPP demands that those who plan to exploit natural resources (oil, timber, coal) must make payments in the form of royalties and concessions. Other remediation funding sources include environmental fees for wastewater emissions, and natural resource exploitation. Payments are also required for essential services such as garbage and hazardous waste collection. In addition, charges for the use of existing infrastructure such as wastewater treatment systems, and deposits for the restoration of land and water resources after extractions are also mandated along with a National Resources Tax levied on those exploiting natural resources.

Under the law of Vietnam, and many countries globally, natural resources owned by the state are considered the property of the citizens of that country. Therefore, any individual or organisation exploiting natural resources is liable for the payment of royalties. This royalty contributes to the state budget and helps the state finance the conservation and development of the natural environment in general, and natural resources in particular. The Natural Resources Tax is a variation of the same theme as the PPP and is revenue of the state budget from users of natural resources in their respective production processes. It has a specific role in implementing the state's management of its exploitation of national resources. In addition to generating state revenue, the purpose of royalties is to limit unreasonable exploitation of resources and to regulate who has the right to use those resources (Prasidya *et al.*, 2025).

In a similar way, the Environmental Protection Tax is a levy on those products and goods whose use is likely to pollute the environment. Therefore, businesses/manufacturers have a significant financial incentive to apply advanced technologies, reduce energy

usage and use appropriate materials in production, to minimise subsequent damage to the environment. The provisions of the Environmental Protection Tax also serve the purpose of raising the awareness of all social groups about environmental protection, thereby contributing to changing the consumption behaviour of the population. For example, as a result of the additional costs generated in the production of a particular unit by the Environmental Protection Tax, consumers are more likely to choose less-polluting products because of their cheaper price or more economical use. Ultimately, it holds polluters and associated entities responsible for the costs of their polluting activities; it contributes to the implementation of other environmental goals, such as encouraging cleaner behaviours, and encourages the implementation of environmentally friendly innovations, and if polluters fail to comply with environmental protection measures, they must pay taxes and be fined by the State (Đinh Văn Linh, 2025).

The Environmental Protection Tax is levied on entities that produce wastewater, solid waste and toxic emissions – any product that negatively affects natural resources and habitats. These may also include noise pollution, excessive vibrations or mining activities. The Tax must be commensurate with the severity and extent of the environmental damage caused. Service fees can also be charged to consumers for the use of clean water, water treatment services, rural water supplies and solid waste collection. Hazardous waste abatement and control may also carry a service fee. There are many other variations of the same principle as PPP practised around the world, such as emissions quotas or pollution quotas, which are transferable discharge permits that entitle factories and companies to discharge up to a designated amount of waste into the environment. Having determined the total maximum acceptable level of pollution in any given situation/location, the pollution-quota permits is then allocated by the appropriate regulating authority. The total amount of permissible emissions recorded on the permits cannot exceed the acceptable maximum. After the allocation of pollution us made, entities have the right to buy or sell permits on the market. These quotas are flexible, easy to use and control and are considered to be relatively fair. Industrial investors are able to negotiate the carbon transfer as a means of minimising their emissions costs, meaning that these quotas are most applicable to factories with potentially high costs of treating pollution.

The Deposit Refund Scheme (DRS) is a monetary guarantee for the return of specified materials or products after use for the purpose of reuse or recycling (Martinho *et al.*, 2024). The stimulus to recycling resides in the deposit or cash -return provision and is usually most effective on consumer products such as glass or metal. Often, the purchase price of an item, unknown to the buyer, includes a fee or tax that is designated for environmental clean-up. The DRS creates a self-financing method for environmental amelioration and shifts financial responsibility for environmental caretaking to individual consumers and organisations. Protecting the environment thus becomes a community project with higher standards and a greater reach. Generally, organisations and individuals participating in such schemes are required by law to make deposits at domestic credit institutions. The level of the deposit depends on the size of the resource exploitation, the degree of environmental impact and the necessary expenses for environmental rehabilitation and restoration after exploitation. The deposit amount must be equal to or greater than the amount needed to restore the environment. Deposits bear

interest and are returned after the environmental renovation and restoration are completed.

This form of environmental improvement and restoration incentive not only reduces the costs to countries in remedying the polluted environment resulting from the exploitation of natural resources, but also raises community awareness of the need for environmental protection through an enhanced sense of social responsibility by organisations and individuals. The environmental deposit device affords governments an opportunity to fund clean-ups without depleting their budgets and assigned greater responsibility for such clean-ups to the wider community. In short, the PPP and its variant schemes serve the essential purpose of not only creating a significant financial deterrent to engaging in activities that cause environmental degradation, but also, through the penalties levied, help contribute to the funding required for environmental protection activities, which are invariably very costly. In the case of Vietnam, every year the State spends around one per cent of its total budget expenditure on environmental protection and restoration. Consequently, the author fully endorses maximising opportunities under Vietnam's current legislation to implement the provisions of the PPP to offset this drain on the nation’s natural and financial resources. Nevertheless, it also needs to be stressed that any initiatives undertaken in this direction must be done in a way that complements rather than impedes the country’s ongoing economic development.

Conclusion

The foregoing analysis has examined the main principles of environmental law and their significance in legal development and environmental protection. The principles of prevention and "polluter pays" are the bedrock of sound environmental governance. For Vietnam to truly harness their power, these concepts must be translated from lofty ideals into concrete legal and economic instruments. The following recommendations provide an actionable pathway to bridge this gap:

Vietnam's environmental laws should prioritise increasing severity of responsibility for high-risk industries. Strict liability should be specifically included in the Law on Environmental Protection, with a focus on sectors like mining, steel production, and chemical manufacturing. Businesses in these industries should be required by law to internalise environmental risks from the beginning of their activities. This would lessen the burden of proof that impacted communities and regulatory bodies currently bear in proving causation and culpability when environmental harm occurs. In addition to being consistent with the polluter-pays principle ingrained in Vietnam's legal and constitutional framework, enshrining strict liability in legislation improves regulatory efficacy by guaranteeing that operators are fully accountable for preventing and correcting environmental harm. Strict liability should be specifically included in the Law on Environmental Protection, with a focus on sectors like mining, steel production, and chemical manufacturing. Businesses in these industries would be required by law to internalise environmental risks from the beginning of their activities.

Vietnam should implement a strong environmental performance bond system that goes beyond the current deposit systems' narrow reach. This is especially important for projects located in ecologically sensitive areas like coastal zones and the Central

Highlands. A mechanism like this would ensure that the funds required for ecological restoration — whether for mangrove ecosystem recovery or mine site rehabilitation — are obtained before any environmental harm occurs. The polluter-pays principle is fully operationalised when environmental bonds are incorporated in this way, guaranteeing that project developers, not the general public or the government, bear the burden and expenses of restoration. This strategy would promote sustainable development goals within Vietnam's changing legal and financial environmental frameworks, improve accountability, and proactively reduce environmental risks.

Make the EIA process a genuine safeguard rather than just a formality. In order to improve enforcement, it is important to make sure that public participarion is no longer just a box to be checked but rather a verified, relevant, and enforceable requirement. Vietnam can accomplish this by requiring complete public disclosure of EIA reports, including baseline data, alternatives analysis, and monitoring plans, and by increasing the role of independent, accredited EIA reviewers. Transparency would be improved, impacted communities would be empowered, and environmentally hazardous projects would not be allowed without sufficient evaluation.

Recalibrating sanctions to eliminate the profit incentive for pollution is a critical need within Vietnam's environmental governance framework. Administrative fines currently often operate as nominal penalties, lacking sufficient deterrence against environmental violations. To reinstate the corrective and preventive functions of environmental law, penalties must be adjusted to consistently exceed the economic benefits derived from non-compliance. This recalibration should factor in the extent of environmental harm, the duration of violations, and the violator’s financial capacity. Aligning sanctions with these considerations transforms environmentally harmful conduct into an economically irrational choice, thereby enhancing legal deterrence effectively.

In addition, creating accessible pathways to environmental justice through the establishment of specialized environmental courts or dedicated chambers within the judicial system would address expertise gaps. This institutional innovation would facilitate citizens and NGOs to seek redress, ensuring fair and efficient resolution of complex environmental disputes. Moreover, integrating the PPP into subsidy reforms offers a potent strategy to support Vietnam's green transition. Phasing out environmentally harmful subsidies for fossil fuels and water-intensive agriculture while redirecting support towards the adoption of green technologies and circular economy models would make sustainable practices financially favorable. Collectively, these reforms would propel Vietnam beyond mere affirmation of environmental principles, helping to build a robust system where prevention is proactive, polluters genuinely bear the costs of their actions, and national sustainable development goals are achieved through tangible, enforceable mechanisms.

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Author's Declarations and Essential Ethical Compliances

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The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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